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VIA ELECTRONIC MAIL; WITH HARD COPY TO FOLLOW BY U.S. MAIL

June 1, 2016

Mr.Guy R. Donaldson
U.S. EPA Region 6, 6PD-L
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733
Donaldson,guy@epa.gov

Re: Rodemacher Power Station/Brame Energy and Teche Power Station facilities – Supplemental Response to Your Preliminary Review of Cleco's October 31st 2015 CAA 114 ICR Submittal - Updated BART Applicability Screening Analysis

Dear Mr. Donaldson:

As a supplement to our April 15, 2016 letter, we are providing the attached updated CAMx modeling report that addresses the three protocol changes you requested in your March 16, 2016 letter. The conclusions remain the same in the updated report as presented in our original report. The CAMx screening analysis demonstrates that the average and maximum source contributions from the 20% worst days as well as the maximum contributions from all days using a natural visibility background approach from all Cleco BART-eligible sources are significantly below the threshold of 0.5 deciview at both the Caney Creek and Breton Class I areas. Furthermore, the cumulative impact of all Cleco BART-eligible sources in Louisiana based on CAMx modeling is well below the 0.5 dv screening threshold. As such, the units do not contribute to visibility impairment at any Class I area, and none of the units are subject to BART.

Thank you for your consideration of this supplemental information. Please contact me with any questions or concerns at 318 484-7718.

Sincerely,

Bill Matthews

Bill Matthews
Director - Environmental Policy and Planning

cc: Vivian Aucoin, LDEQ (vivian.aucoin@la.gov)
Vennetta Hayes, LDEQ (vennetta.hayes@la.gov)
Jeremy Jewell, Trinity Consultants (jjewell@trinityconsultants.com)

ENCLOSURE 4:

Statement of Certification

I certify under penalty of law that I have examined and am familiar with the information in the enclosed documents, including all attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief, true and complete. I am aware that there are significant penalties for knowingly submitting false statements and information, including the possibility of fines or imprisonment pursuant to section 113(c)(2) of the CAA, and 18 U.S.C. §§ 1001 and 1341.

(Signature) 6-1-16

VP - Generation Operations

(Title)

Updated BART Applicability Screening Analysis

Cleco Corporation
Brame Energy Center
Teche Power Station

CLECO®

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May 31, 2016

Project 153701.0033

Trinity Consultants

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On May 30, 2012, the United States Environmental Protection Agency (EPA) issued a final limited disapproval of the Louisiana Regional Haze State Implementation Plan (SIP) that the Louisiana Department of Environmental Quality (LDEQ) submitted in 2008 to address regional haze and visibility transport requirements for the State of Louisiana. The LDEQ requested Cleco Power LLC (Cleco) to evaluate two (2) electric generating stations for Best Available Retrofit Technology (BART) eligibility. In addition, on May 19, 2015, the EPA, citing authority under Section 114(a) of the Clean Air Act (CAA), 42 U.S.C. § 7414(a), requested information from Cleco (Section 114 Request) related to the Regional Haze requirements in Louisiana.[1] In response to these requests, Trinity, on behalf of Cleco, prepared a BART Applicability Screening Analysis report that was submitted to the LDEQ and the EPA on July 30, 2015 for Cleco's BART-eligible sources in Louisiana. This Updated BART Applicability Screening Analysis supplements and refines the preliminary screening analysis and is submitted as Cleco's BART applicability screening analysis for its BART-eligible sources in Louisiana.

The BART guidelines and Central Regional Air Planning Association (CENRAP) modeling protocol recommend use of the CALPUFF dispersion modeling system (CALPUFF) for the BART eligibility determination. However, there are several limitations and shortcomings with the use of the CALPUFF modeling protocol for visibility impairment (e.g., nitrate over-prediction, distance limitation, etc.). Due to these known issues, Trinity conducted the updated screening analysis using the Comprehensive Air Quality Model with Extensions (CAMx) modeling system. CAMx is a sophisticated photochemical grid model that includes the ability to characterize complex chemical reactions in the atmosphere. This analysis demonstrates that the visibility impacts from each of the Cleco BART-eligible sources are well below the EPA's recommended screening threshold of 0.5 deciview (dv) at both the Breton Wilderness Area (Breton) and Caney Creek Wilderness Area (Caney Creek). For Breton, the maximum facility contribution occurring during the 20% worst days is 0.0236 dv from the Brame Energy Center (herein referred to as Brame or the Brame Plant). The maximum individual unit contribution from the 20% worst days at Breton is 0.0222 dv by Brame Unit 2. Similar to the Breton results, the Brame Plant is the maximum facility contributor at Caney Creek with only 0.0146 dv contribution to deciview haze index on the 20% worst days, while the maximum individual unit contribution at Caney Creek is 0.0129 dv from Brame Unit 2. These modeled impacts are insignificant in comparison to the 0.5 dv threshold. Further, the cumulative impact of all Cleco BART-eligible sources in Louisiana based on CAMx modeling is well below the 0.5 dv screening threshold at Breton and Caney Creek. The cumulative average contribution to the deciview haze index on the 20% worst days is 0.0188 dv at Breton and 0.0104 dv at Caney Creek while the cumulative maximum contribution on the 20% worst days is 0.0239 dv at Breton and 0.0146 dv at Caney Creek.

Additionally, the maximum contribution for all days calculated based on a natural visibility background using the annual average natural background conditions also fall below the 0.5 dv threshold. At Breton, the maximum individual unit contribution for all days with a natural background is 0.0885 dv by Brame Unit 2 while the maximum facility contribution is 0.0951 dv from the Brame Plant. The maximum individual unit contribution for all days with a natural background at Caney Creek is 0.2673 dv by Brame Unit 2 while the maximum facility contribution is 0.2852 dv by the Brame Plant. The cumulative maximum contribution for all days with a natural background is 0.1013 dv at Breton and 0.2857 dv at Caney Creek. As such, Cleco's BART-eligible sources are not reasonably anticipated to "cause" or "contribute" to visibility impairment at any Class I area and are therefore not subject to BART.

This report is organized as follows: Section 2 provides background on the required BART screening analyses. Section 3 includes a detailed discussion of the limitations of the CALPUFF modeling protocol and justification for the use of CAMx for BART screening analyses. Section 4 provides the detailed modeling methodology for using

[1] Letter from Wren Stenger, EPA Region 6, dated May 19, 2015, to Cleco Power LLC.

CAMx for the BART screening assessment. Section 5 presents the results of the CAMx screening analysis for the BART-eligible units at the Brame Plant and the Teche Power Station (herein referred to as Teche or the Teche Plant).

2. BACKGROUND

In the 1977 amendments to the CAA, Congress set a national goal to restore national parks and wilderness areas to pristine conditions by preventing any future, and remedying any existing, man-made visibility impairment. On July 1, 1999, the EPA published the final Regional Haze Rule (RHR). The objective of the RHR is to restore visibility to pristine conditions in 156 specific areas across the United States known as Class I areas. The CAA defines Class I areas as certain national parks (larger than 6,000 acres), wilderness areas (larger than 5,000 acres), national memorial parks (larger than 5,000 acres), and international parks that were in existence on August 7, 1977.

2.1. VISIBILITY IMPAIRMENT

In practical terms, visibility at Class I areas is most simply measured as the farthest distance naturally seen by an average human. The light extinction coefficient is a more refined measure of visibility and represents the gradual decrease in light intensity due to absorption and scattering. The light extinction coefficient can be calculated using measured concentrations of the primary contributing species to visibility impairment.[2] In 1999, an equation to estimate light extinction based on available Interagency Monitoring of Protected Visual Environments (IMPROVE) data was incorporated into the RHR (Old IMPROVE equation). In 2007, a revised equation was developed to reduce "bias for high and low light extinction extremes" and to make the equation "more consistent with the recent atmospheric aerosol literature." This equation is given as follows:

$$
\begin{aligned}
b_{ext} = 2.2 &\times f_S(RH) \times [Small\ Sulfate] \\
&+ 4.8 \times f_L(RH) \times [Large\ Sulfate] \\
&+ 2.4 \times f_S(RH) \times [Small\ Nitrate] \\
&+ 5.1 \times f_L(RH) \times [Large\ Nitrate] \\
&+ 2.8 \times [Small\ Organic\ Mass] \\
&+ 6.1 \times [Large\ Organic\ Mass] \\
&+ 10 \times [Elemental\ Carbon] \\
&+ 1 \times [Fine\ Soil] \\
&+ 1.7 \times f_{SS}(RH) \times [Sea\ Salt] \\
&+ 0.6 \times [Coarse\ Mass] \\
&+ Rayleigh\ Scattering\ (Site\ Specific) \\
&+ 0.33 \times [NO_2(ppb)]
\end{aligned}
$$

Where b_{ext} represents the light extinction coefficient in inverse megameters (Mm^{-1}), and individual species concentrations are shown in brackets with units of micrograms per cubic meter ($\mu g/m^3$). The f_L and f_S terms are unitless water growth factors given as functions of relative humidity (RH) for concentrations of large and small sulfates and nitrates, while f_{SS} represents the water growth factor for sea salt concentrations. The numerical constants given in the equation (e.g., 2.2) represent dry mass extinction efficiency terms in units of square meters per gram (m^2/g).[3]

Because the units for the light extinction coefficient (Mm^{-1}) are difficult to conceptualize and compare in practical terms, the deciview haze index (dv) was developed. The dv is an index of atmospheric haze used to quantify changes in visibility. The dv scale expresses uniform changes in haziness in terms of common

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[2] United States Environmental Protection Agency. *Visibility in Mandatory Federal Class I Areas (1994-1998): A Report to Congress.* EPA-452/R-01-008. Chapter 1 – Introduction to Visibility Issues. November 2001.

[3] Kumar, Naresh, et al. "Revised Algorithm for Estimating Light Extinction from IMPROVE Particle Speciation Data." Journal of the Air & Waste Management Association JAWMA 57.11 (2007): 1326-336.

increments across the entire range of visibility conditions.[4] According to the EPA, "a one deciview change in visibility is a small but noticeable change in haziness under most circumstances when viewing scenes in Class I areas."[5] The deciview haze index is calculated as a function of the ratio of the light extinction coefficient to the approximate average extinction value due to Rayleigh scattering alone (10 Mm^{-1}).

$$Deciview\ Haze\ Index\ (dv) = 10 \times \ln\left(\frac{b_{ext}\ [Mm^{-1}]}{10\ [Mm^{-1}]}\right)$$

The RHR requires States to set goals that provide for reasonable progress towards achieving natural visibility conditions for each Class I area in their state. On July 6, 2005, the EPA published amendments to its 1999 RHR, often referred to as the BART rule, which included guidance for making source-specific BART determinations. The BART rule defines BART-eligible sources as sources that meet the following criteria:

(1) Have potential emissions of at least 250 tons per year of a visibility-impairing pollutant,
(2) Began operation between August 7, 1962, and August 7, 1977, and
(3) Are included as one of the 26 listed source categories in the guidance.

Per the 2005 BART Guidelines, a source that is responsible for a 1.0 dv change or more should be considered to "cause" visibility impairment; a source that causes less than a 1.0 dv change may still contribute to visibility impairment and thus be subject to BART. The EPA recommended a threshold of 0.5 dv as the contribution threshold for BART applicability.[6] Once it is determined that a source is subject to BART, a BART determination must address air pollution control measures for the source.

In 2008, the LDEQ submitted a regional haze SIP to address emissions that contribute to regional haze, and on May 30, 2012, the EPA issued a final limited disapproval of the SIP. Cleco has emission sources at two (2) electric generating stations in Louisiana that meet the three criteria mentioned above and therefore are considered BART-eligible sources. On behalf of Cleco, Trinity is providing this updated BART applicability screening analysis for three (3) units at the Brame and Teche plants to assist the LDEQ in the development of a revised SIP and in response to the EPA's Section 114 Request.

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[4] Pitchford, M. and Malm, W., "Development and Applications of a Standard Visual Index," Atmospheric Environment, v. 28, no. 5, March 1994.

[5] 62 Fed. Reg. 41128 (July 31, 1997), "A one deciview change in haziness is a small but noticeable change in haziness under most circumstances when viewing scenes in mandatory Class I Federal areas."

[6] 70 Fed. Reg. 39104 (July 6, 2005), "...for purpose of determining which sources are subject to BART, States should consider a 1.0 deciviews change or more from an individual source to "cause" visibility impairment, and a change of 0.5 deciviews to "contribute" to impairment".

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3. LIMITATIONS OF CALPUFF FOR VISIBILITY MODELING

The following sections discuss specific limitations related to the use of CALPUFF and the CENRAP BART protocol defaults and detail the rationale for using CAMx, a superior alternative for assessing visibility impacts.

3.1. CALPUFF MODELING FOR VISIBILITY

In April 2003, the EPA revised Appendix W, *Guideline on Air Quality Models (Guideline)*, making CALPUFF the recommended model for long-range transport (distances > 50 km).[7] CALPUFF is a multi-layer, multi-species non-steady-state puff dispersion modeling system that simulates the dispersion, chemical transformation, and long-range transport of multiple visibility-affecting pollutant emissions. Per the *Guideline*, CALPUFF is intended for use on scales from tens of meters from a source to hundreds of kilometers.

On July 29, 2015, the EPA published proposed revisions to the *Guideline* in the Federal Register that would remove CALPUFF as the recommended model for long-range transport.[8] In the proposed rule, the EPA states that, although the proposed changes to the *Guideline* do not affect their recommendation in the 2005 BART Guidelines to use CALPUFF in the BART determination process, consistent with the BART guidelines, the state may accept an alternate modeling protocol at its discretion.[9]

3.2. CALPUFF MODELING PROTOCOL LIMITATIONS

The following sections detail the main limitations associated with use of the CALPUFF modeling system when used as prescribed in the EPA BART protocol.

3.2.1. Outdated Versions of CALPUFF and CALMET Models

The CALPUFF version approved by the EPA for use in BART analyses is Version 5.8.4, which was released on June 23, 2007. Although numerous updates have been released since that time, the EPA still relies on this outdated version of the model despite the fact that considerable advancements have been made. Newer versions of CALPUFF include more complex chemistry capabilities, which allow for more accurate representation of sulfate and nitrate formation by considering ozone chemistry, organic aerosol formation, inorganic gas particle equilibrium, and aqueous phase transformation.[10]

In addition to the CALPUFF Model, the CALMET Model version utilized in BART analyses to generate the hourly three-dimensional meteorological fields, which are then used in CALPUFF to simulate the non-steady state transport and dispersion of pollutants emitted from a source, is also outdated (version 5.8 dating back to 2007). The latest EPA-approved version of CALMET is Version 5.8.4, which incorporated bug fixes and enhancements and has undergone a consequence analysis as well as a review by the EPA. Since this latest EPA-approved

[7] U.S. EPA's *Guideline on Air Quality Models* 40 CFR Part 51, Appendix W (Revised, November 9, 2005) (*Guideline*).

[8] 80 Fed. Reg. 45340 (July 29, 2015).

[9] Ibid.

[10] Gale F. Hoffnagle, Accuracy of Visibility Protocol Modeling in BART Evaluations, TRC Environmental Corporation, June 15, 2012.

version must be used in Prevention of Significant Deterioration (PSD) Class I Impact Assessments, the EPA should also assess BART impacts using the latest EPA-approved version of CALMET.[11, 12]

3.2.2. Ammonia

According to the CENRAP BART Modeling Guidelines, CENRAP recommends a background ammonia concentration of 3 ppb for CALPUFF screening analyses.[13] This value is assumed to be temporally and spatially invariant.[14] As such, to remove some of the conservatism in a screening analysis, in specific BART-eligible source modeling, greater "source specificity" can be added through the use of variable background ammonia."[15] The guidelines further state that separate monthly background ammonia estimates should be developed from CENRAP's Community Multi-scale Air Quality Model (CMAQ) or CAMx simulations since these models include spatial variability. The previously submitted CALPUFF BART screening analyses for the three (3) Cleco electric generating units were based on the default screening value of 3 ppb despite the suggested refinement.

3.2.3. Distance Limitation

In 1998, the Interagency Workgroup on Air Quality Modeling (IWAQM) conducted a study using tracers to test the ability of CALPUFF to match measured concentrations.[16] The study specifically involved non-reacting tracers and focused on the model's ability to predict plume location and concentration rather than accuracy of the model chemistry. Table 3-1 below summarizes the results of the IWAQM study.

Table 3-1. Summary of the IWAQM CALPUFF Study

Experiment	Distance (km)	Error in Model Results	
		Angle of Error (degrees)	Concentration Error
Savannah River	~100	25	140%
Idaho Falls	48	40	200%
	90	40	200%
Great Plains	100	5-20	250%
	600	25	-300%

Based on the results shown above, IWAQM concluded that CALPUFF could be used to predict concentrations at distances of "200 kilometers or less" from the source and that "transport beyond 200 to 300 km should be done cautiously with an awareness of the likely problems involved."[17] Despite this, the EPA's BART guidelines fail to

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[11] U.S. EPA, Memorandum Re: Supplemental Information for EPA's 2009 Draft Report regarding Reassessment of IWAQM Phase 2 Recommendations, To: Proposed Regulatory Docket No. EPA-HQ-OAR_2015-0310, From Tyler J. Fox, Group Leader of Office of Air Quality Planning and Standards, Air Quality Modeling Group, June 30, 2015.

[12] AMEC Memorandum, Re: Modification of CALPUFF and CALMET Final Report, To: James Thurman, EPA OAQPS, December 3, 2013.

[13] Alpine Geophysics CENRAP BART Modeling Guidelines, Appendix B, *CALPUFF Screening Configuration*, December 15, 2005.

[14] Alpine Geophysics CENRAP BART Modeling Guidelines, Chapter 6 *CALPUFF Screening Applications*, Section 6.4.5 *CALPUFF Model Configuration*, December 15, 2005.

[15] Alpine Geophysics CENRAP BART Modeling Guidelines, Chapter 1, Section 1.3.1 *Three BART Modeling Approaches, Source-Specific Modeling*, December 15, 2005.

[16] EPA-454/R-98-019, December 1998.

[17] Ibid.

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address the uncertainties in model predictions at distances greater than 200 km and often require sources to install expensive controls based on small impacts predicted by CALPUFF at distances in excess of 200 km. Given the significant uncertainty in model predictions with increasing distance from the source, the distance between Class I areas and modeled sources should be taken into consideration when reviewing predicted visibility impacts as part of BART screening analyses. Table 3-2 below shows the approximate distance from the two (2) BART-eligible Cleco electric generating stations to Breton and Caney Creek. Based on the significant distances between Brame and Teche and the Class I areas, use of the CALPUFF modeling system to predict impacts at Caney Creek and Breton should be evaluated further for potential problems.

Table 3-2. Approximate Distances from Class I Areas

Cleco Plant	Distance to Breton (km)	Distance to Caney Creek (km)
Brame	422	352
Teche	245	569

3.2.4. Puff Splitting

One specific source of error in CALPUFF, when run using the default options, results from the model treating each puff as a uniform parcel of air that is transported downwind. In reality, each puff can extend through multiple vertical layers and horizontal grid cells which have varying wind speeds and direction. The larger the distance between the source and receptor, the greater the effects of this inaccurate characterization. The CALPUFF model includes a puff splitting option which enables a single puff to be split into multiple puffs both horizontally and vertically depending on the specific meteorological conditions it encounters. The use of this option has not been approved by the EPA even though this option can mitigate the known tendency for over-prediction at distances of greater than 200 km from the source. This option is specifically noted in the CENRAP BART Modeling Guidelines as an option that a site may elect "to introduce greater source specificity into the modeling."[18]

3.2.5. Over-prediction of Nitrates

It has been well-documented that the CALPUFF modeling system over-predicts nitrate contributions by a significant margin when compared to measured contributions.[19] Nitrogen oxides (NO_X) and sulfur dioxide (SO_2) in the atmosphere react with ammonia to form ammonium nitrates and ammonium sulfates, which are two of the primary particulates that act to cause light extinction. As mentioned earlier, the EPA BART modeling protocol assumes a single constant background ammonia concentration of 3 ppb without spatial or temporal variation. However, since the primary source of ammonia in the atmosphere is biodegradation of vegetation, which occurs at a much lower rate during winter months, actual background ammonia concentrations are highly variable on a seasonal basis. Regardless of this seasonal variation, CALPUFF continuously predicts the formation of nitrates even when there would be insufficient ammonia available for the chemical reaction to occur. This failure to consider variable background ammonia concentrations is one factor resulting in the over-prediction of nitrate formation.

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[18] Alpine Geophysics CENRAP BART Modeling Guidelines, Chapter 1, Section 1.3.1 *Three BART Modeling Approaches, Source-Specific Modeling*, December 15, 2005.

[19] Gale F. Hoffnagle, Accuracy of Visibility Protocol Modeling in BART Evaluations, TRC Environmental Corporation, June 15, 2012.

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Nitrate formation is also temperature dependent. Nitrates do not readily form in high temperatures so that during the summer when ammonia is more readily available to react with NO_X, the temperature becomes a limiting factor. The version of the CALPUFF model used in the screening analyses does not consider this temperature dependence, resulting in additional over-prediction of nitrates.

3.2.5.1. Speciated Contributions

To further explore this issue, Trinity evaluated the respective contributions from nitrates and sulfates to total extinction for actual IMPROVE observations, CALPUFF predicted values, and data from the CENRAP Particulate Source Apportionment Technology (PSAT) tool, which uses the CAMx modeling predicted data from the CENRAP CAMx modeling analysis. Figures 3-1 through 3-3 show the speciated contribution to visibility impairment at Breton based on IMPROVE data, CALPUFF predicted values, and data from the CENRAP PSAT tool.

The IMPROVE observation data shows that sulfates are the actual primary contributor to total extinction at Breton, causing on average 70.74% of total light extinction on the worst 20% days. Nitrates are observed to cause an average of only 9.28% of the total extinction on the worst 20% days. The CALPUFF predicted pollutant contribution analysis, however, indicates that nitrate is the highest contributor with 66.31% while sulfates contribute only 31.14%. This disparity between IMPROVE observations and CALPUFF predictions highlights the significance of CALPUFF's tendency to over-predict nitrates. In comparison, the CAMx-based CENRAP PSAT tool predicted pollutant contribution analysis agrees closely with the observed IMPROVE data, with 78.10% of total extinction caused by sulfates and only 6.68% caused by nitrates.

3.3. CAMx MODELING FOR VISIBILITY

The CAMx modeling system is a publicly available computer modeling system for the integrated assessment of photochemical and particulate air pollution. The modeling system is composed of a gridded photochemical model, a meteorological model, and an emissions model. CAMx includes a complex chemistry profile, which allows for a more accurate characterization of reactions taking place in the atmosphere, and the CAMx PSAT tool can be used to determine individual source contributions within a run. The use of nested grids, PSAT, and full-chemistry Plume-in-Grid (PiG) allows for finer resolution results and a more accurate representation of plume transport, dispersion, and chemistry for individual point sources. Therefore, it has been determined that photochemical models such as CAMx may be used for BART modeling to overcome known limitations in the CALPUFF modeling system.[20]

[20] Alpine Geophysics CENRAP BART Modeling Guidelines, Chapter 1, Section 1.3.1 *Three BART Modeling Approaches, Source-Specific Modeling*, December 15, 2005.

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Figure 3-1. Observed (IMPROVE) Percent of Total Extinction by Species for 20% Worst Days at Breton Wilderness Area

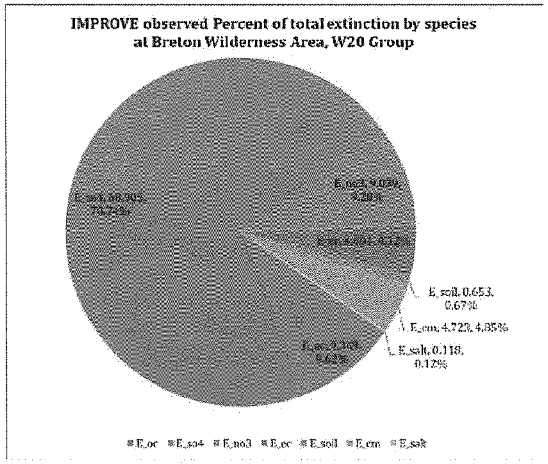


Figure 3-2. CALPUFF Predicted Percent of Total Extinction by Species for 20% Worst Days at Breton Wilderness Area

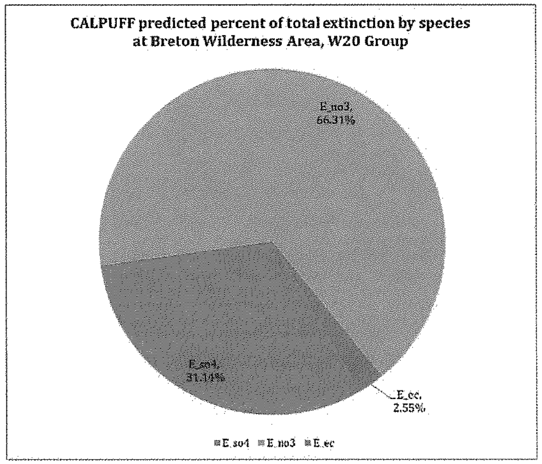
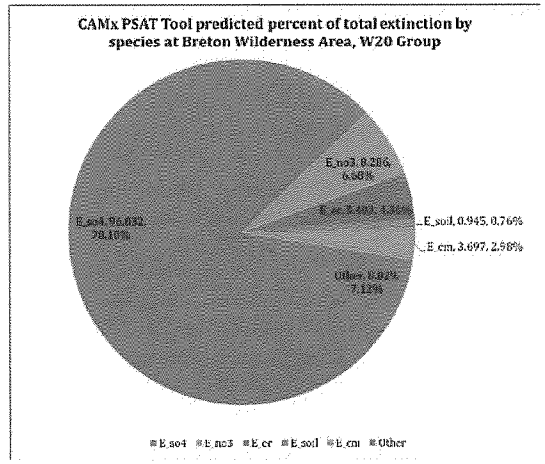


Figure 3-3. CENRAP CAMx PSAT Tool Predicted Percent of Total Extinction by Species for 20% Worst Days at Breton Wilderness Area



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3.3.1. CALPUFF vs CAMx

CALPUFF and CAMx are both non-steady-state numerical models. However, there are substantial differences between the two models that dictate when a certain model should be utilized, including especially the characterization of atmospheric chemistry and the emission inventories used as the basis for modeling assessments. In general, the CAMx model is far more sophisticated than the CALPUFF model. While the CALPUFF model includes a chemistry mechanism, the CAMx chemistry mechanism is significantly more complex, including alternate pathways for regional haze precursor emissions to be consumed/reacted, which more accurately reflects actual conditions that occur in the atmosphere. Additionally, the simple chemistry mechanism in CALPUFF does not include secondary formation.

The draft EPA *Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone,* $PM_{2.5}$*, and Regional Haze,* released in December 2014 (herein referred to as the Draft Guidance), discusses the use of photochemical grid models, noting that CMAQ and CAMx are the most commonly used models for attainment demonstrations. The Draft Guidance specifically notes that "a modeling based demonstration of the impacts of an emissions control scenario...as part of a regional haze assessment usually necessitates the application of a chemical transport grid model." The discussion throughout the Draft Guidance focuses on items specific to photochemical grid models like CAMx, including emissions inventories, supporting models, pre-processors, and applying a model to attainment and changes in visibility. Additionally, the CENRAP BART Modeling Guidelines acknowledge that CALPUFF substantially over-predicts concentrations at large distances from the source.[21] Per the CENRAP BART Modeling Guidelines, "the application of comprehensive, full-science regional visibility assessment tools will yield more realistic BART control requirements than those generated by a puff model."[22] Therefore, the use of CMAQ or CAMx is not only deemed acceptable by CENRAP but is even recommended for refined visibility modeling of BART-eligible sources.

3.3.2. Emission Inventories and Interaction of Pollutants

The Draft Guidance states that "the emission sources included in the analysis must be comprehensive, including emissions from all source categories" (i.e., point sources, non-point stationary sources, on-road and non-road mobile sources, fires, and biogenic sources) and "all sources of emissions." A CAMx modeling analysis includes a comprehensive inventory, capturing emissions from each of these source categories, which are then available to react with and consume available precursors. This comprehensive representation of reactions between the complete inventory and the ozone precursors limits the availability of precursors to react with emissions from a facility or source in question. This has been referred to by the EPA as a "dirty background analysis". CALPUFF analyses conducted in support of BART do not consider the full inventory of sources and, thus, do not account for other pollutants challenging and consuming precursor emissions. As such, ammonia and other precursor pollutants are more fully available to react with a facility's emissions to generate haze in a modeled simulation using CALPUFF. This is referred to by the EPA as a "clean background analysis". Therefore, the use of CALPUFF does not accurately reflect the interaction of pollutants in the atmosphere.

3.3.3. Distance Considerations

Distance should be one of the main factors in deciding which model is most appropriate. Based on the IWAQM study discussed in Section 3.2.3, CALPUFF is recommended for use within 200 km or less. As shown in Table 3-2 above, Brame and Teche are located 422 and 245 km from Breton and 352 and 569 km from Caney Creek, respectively. In its Reasonable Progress (RP) analysis conducted in support of the Oklahoma and Texas Regional

[21] Alpine Geophysics CENRAP BART Modeling Guidelines, Chapter 8 *Alternative Model Applications*, December 15, 2005.

[22] Ibid.

Haze FIP, the EPA relied on CAMx rather than CALPUFF. In the Technical Support Document (TSD) for the Oklahoma and Texas Regional Haze FIP, the EPA expressed its concern with using CALPUFF at greater distances due to over-prediction and decreased accuracy. Given the significant distances between the Cleco plants and Caney Creek and Breton, CALPUFF is not the appropriate model to use for assessing visibility impacts from these sources.

3.4. USE OF CAMx FOR BART SCREENING ANALYSES

The Texas Commission on Environmental Quality (TCEQ) contracted Ramboll-Environ (Environ) to complete a BART screening analysis for potential BART-eligible sources in Texas using CAMx. A modeling protocol was submitted to EPA Region 6 and the use of CAMx was approved by the EPA. Justification for the use of CAMx included the following:[23]

- The use of a photochemical grid model allows for efficient screening of many sources in a scientifically defensible manner;
- The Class I areas where visibility impacts will be estimated are far away from the source;
- If sources can be determined to make an insignificant contribution to visibility impairment as a group, resources can then be focused on those sources determined most likely to impact visibility;
- Use of a photochemical grid model allows for quantitative assessment of the visibility impacts due to potential BART-eligible sources' volatile organic compound (VOC) and particulate matter (PM) emissions;
- Use of a photochemical grid model with full chemistry alleviates concerns raised about the inadequacy of CALPUFF sulfate and nitrate chemistry; and
- Use of a photochemical grid model provides an evaluation of the cumulative impact of BART-eligible sources on visibility in Class I areas.

These same considerations apply to the Cleco BART screening analyses for its sources in Louisiana. Brame and Teche are located 422 and 245 km from Breton and 352 and 569 km from Caney Creek, respectively, as shown in Table 3-2. Additionally, as discussed above, Trinity demonstrated that over-prediction of nitrates is a significant concern with CALPUFF and that the CAMx-predicted speciated contribution is much closer to actual IMPROVE observations. As such, use of CAMx for conducting BART screening analyses for the Cleco BART-eligible facilities is appropriate.

[23] Morris, Ralph. Screening Analysis of Potential BART-Eligible Sources in Texas. Prepared for Texas Commission on Environmental Quality. September 27, 2006.

4. REGIONAL HAZE MODELING METHODOLOGY

A regional haze assessment involves the determination of the total light extinction and the contribution of each selected emissions source to the total light extinction. This BART applicability modeling analysis was performed using the advanced photochemical modeling software CAMx. A description of the modeling files, domain, model simulation steps, and analysis methodologies are discussed in detail in the following subsections.

4.1. EPA PHOTOCHEMICAL MODELING PLATFORM

This analysis builds on the modeling of 2002 and 2018 emissions conducted previously by CENRAP and subsequently updated by Environ for the EPA to aid in the development of the EPA's proposed Oklahoma and Texas Regional Haze FIP.[24] Environ's baseline scenarios are based on input data originally developed by CENRAP and enhanced by Environ to provide higher resolution results and to accommodate more recent versions of CAMx and associated pre-processors. The 2002 baseline scenario relies on 2002 National Emission Inventory (NEI) actual emissions data. The 2018 emissions data in the baseline scenario were projected by applying growth and control factors to the 2002 NEI data.[25]

4.1.1. Modeling Domain

Figure 2-1 below presents the modeling domain used in the CENRAP regional haze assessment. This nested grid configuration of the CAMx domain includes the following grids:

- RPO_36km: This grid contains 36 kilometer (km) grid cells covering all of the continental U.S., along with southern Canada, northern Mexico, and portions of the Gulf of Mexico, Atlantic Ocean, and Pacific Ocean.
- Regional_12km: This nested grid contains 12 km grid cells covering all of Texas, Arkansas, and Louisiana, a majority of Oklahoma, and parts of Mississippi, Tennessee, Missouri, and New Mexico.

All modeling domain grids are projected in the Lambert Conformal Conic (LCC) map projection. The 36-km grid is also the domain used by the Regional Planning Organizations (RPOs) of which CENRAP is an example. The 12-km grid was developed by Environ to help minimize the effects of boundary conditions on the 12-km grid since the boundary condition information is passed from the 36-km to the 12-km grid. The modeling domain contains locations of IMPROVE sites that correspond to the Class I areas, Caney Creek and Breton, which are under consideration in the BART applicability assessment.

[24] Snyder, Erik, Michael Feldman, and Joe Kordzi. "Technical Support Document for the Oklahoma and Texas Regional Haze Federal Implementation Plans." U.S. EPA. November 2014.

[25] Nopmongcol, Uarporn, et al. Memo to Ellen Belk, EPA Region 6. "2018 Base Case CAMx Simulation, Texas Regional Haze Evaluation." September 16, 2013.

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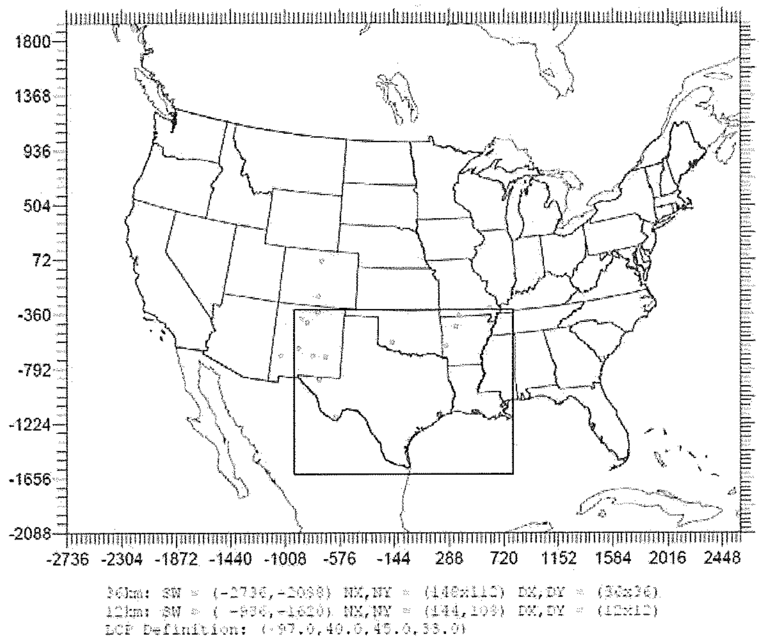
Figure 4-1. Photochemical Modeling Platform Domain[26]



4.1.2. Emissions Inventory

The CAMx model requires emissions in an hourly, speciated format. The Sparse Matrix Operator Kernel Emissions (SMOKE) pre-processor is used to process various types of regional haze precursor emissions data into a temporally and spatially allocated format. The SMOKE emissions pre-processor was configured to match the EPA's specifications and was then used to process the emissions inventories used in this assessment. Version 3.1 of SMOKE was utilized in this analysis to be consistent with the EPA. The 2002 NEI data and 2018 future projected emission were used for this analysis. The 2002 baseline data and 2018 future projected data required specific updates to Cleco's BART-eligible sources; therefore, these emissions points were updated in inventories separate from the other point source inventories and were merged into a single CAMx inventory file once SMOKE processing was complete.

4.1.3. Other CAMx Input Data

The remaining input data required to run CAMx, including but not limited to meteorological data, land-use files, albedo-haze-ozone inputs, photolysis rates, and boundary and initial conditions, were unchanged from the original 2002 and 2018 scenario files.[27]

4.2. CLECO SCENARIO ONE - BASELINE SCENARIO

The purpose of the baseline scenario is to develop a baseline level of total modeled light extinction at Caney Creek and Breton which is required for post processing the BART screening scenario (Cleco Scenario Two).

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[26] Nopmongcol, Uarporn, et al. Memo to Ellen Belk, EPA Region 6. "2018 Base Case CAMx Simulation, Texas Regional Haze Evaluation." September 16, 2013.

[27] Nopmongcol, Uarporn and Greg Yarwood. Memo to Ellen Belk, EPA Region 6. "2002 Baseline CAMx Simulation, Texas Regional Haze Evaluation." February 21, 2013.

Additionally, the CAMx PSAT tool was used to trace the specific impacts of Cleco's BART-eligible sources in Louisiana. As additional modeling is performed using the projected 2018 emissions, the contributions of Cleco's BART-eligible sources can be determined against the baseline values.

4.2.1. Emissions Inventory Updates

This regional haze assessment was based on the 2002 baseline scenario performed by Environ and updated by Trinity for Cleco's BART-eligible sources. Trinity obtained the 2002 emissions inventory developed by CENRAP and updated by Environ to incorporate selected updates, including but not limited to the addition of several new units, etc. Trinity further reviewed and updated this emissions inventory to revise the stack locations, stack parameters, and emission rates for all of Cleco's BART-eligible sources to ensure the sources are accurately represented.

BART guidelines require the use of maximum 24-hr actual emissions in BART modeling. In accordance with the previously approved Texas Commission on Environmental Quality (TCEQ) BART screening CAMx modeling protocol, the 2002 actual emissions were doubled as a conservative estimate of maximum 24-hour emissions for Cleco's BART-eligible sources.[28] Similar updates were incorporated into BART-eligible sources operated by Entergy Services, Inc (Entergy). Trinity used 2002 actual emissions for all other sources in this baseline run.

4.3. CLECO SCENARIO TWO - BART SCREENING SCENARIO

The purpose of this modeling scenario is to determine whether emissions from Cleco's BART-eligible sources in Louisiana cause or contribute to visibility impairment at Caney Creek and Breton. The BART screening scenario also uses the 2002 actual emission rates for all Cleco BART-eligible sources, while all other emission inventories were modified by applying 2018 growth and control projection factors. Although these projections could also apply to Cleco's BART-eligible sources and would result in lower emission rates, the use of 2002 actual emissions provides for a more conservative evaluation of potential visibility impairment.

4.3.1. Emissions Inventory Updates

The 2018 scenario emissions inventory obtained from CENRAP and updated by Environ served as the basis for Cleco's BART Screening scenario. Trinity updated this 2018 baseline emission inventory to incorporate doubled 2002 actual emissions for Cleco's BART-eligible sources along with changes to stack parameters and stack locations to ensure sources are accurately represented. Similar updates were incorporated into BART-eligible sources operated by Entergy. The project emissions inventory containing Cleco's BART-eligible sources did not vary from the 2002 Baseline Scenario (Cleco Scenario One). Trinity did not revise any other 2018 future projections.

[28] Revised Draft Final Modeling Protocol: Screening Analysis of Potentially BART-Eligible Sources in Texas. Prepared for the TCEQ by ENVIRON International Corporation. September 27, 2006.

5. CAMx MODELING RESULTS

CAMx model outputs were post-processed and analyzed to determine the visibility effects of each of the Cleco BART-eligible sources. In order to obtain comparable results to the EPA's CAMx modeling, the same post-processing approach was utilized, which involves the conversion of binary CAMx output files into a readable format, the extraction of relevant regional haze pollutant concentration information, and the calculation of relative response factors (RRF) using the EPA's Modeled Attainment Test Software (MATS). Calculation workbooks provided by the EPA and modified by Trinity were then used to determine visibility impacts. The full post-processing procedure used to analyze each modeling scenario is discussed in detail below.

5.1. MATS PROCESSING

The raw CAMx output data most relevant to this regional haze assessment includes an overall average concentration file and a source apportionment concentration file, for each grid utilized (i.e., 12-km and 36-km grids) and for all modeled dates. These raw output files are in Fortran binary and are based on the Urban Airshed Model (UAM) convention. Several post-processor utility programs are used to convert these UAM formatted output files into MATS ready comma separated value (CSV) input files for individual source groups identified by PSAT.

MATS forecasts the level of visibility at Class I areas by using post-processed CAMx modeling output in accordance with monitoring data from the IMPROVE program. The three primary files required to run MATS are the base year model CAMx output, the future year model CAMx output, and the IMPROVE monitoring data. For the purposes of this modeling assessment, 2002 was selected as the base year for the baseline scenario runs. The 2018 future year model output refers to the BART screening scenario CSV file created. The IMPROVE monitoring data is provided in the MATS software package download from the EPA.

First, MATS uses the IMPROVE monitoring data to identify the 20% best and 20% worst visibility days at each Class I area for the base year, 2002. Using the base year modeled output data on these exact same 20% best and 20% worst days, MATS calculates the average 20% best and 20% worst modeled concentrations of each of the pollutants identified (e.g., sulfates, nitrates, etc.). MATS then performs the same calculations using the same days with the 2018 future year model data. These values are next used to calculate RRF values, which are ratios of future year modeled concentrations to base year modeled concentrations, both predicted near the same Class I area. The result of this step is a set of best and worst RRF values calculated for all identified species at each Class I area. These RRF values are used in accordance with IMPROVE monitoring data to forecast future deciview haze index values.

The final output from the MATS analysis includes, but is not limited to, the best and worst RRF values calculated for each species and Class I area, the best and worst average daily deciview haze index values for each valid year and Class I area, and the annual average deciview haze index values for each Class I area. In order to perform the required calculations for the PSAT source contribution analysis, the PSAT-negated CSV files were also processed by MATS so that specific PSAT-negated RRF values could be calculated for each PSAT source. These RRF values represent the relative response of each modeled pollutant concentration resulting from the removal of each PSAT source.

5.2. PSAT SOURCE CONTRIBUTION ANALYSIS

The PSAT source contribution analysis determines the individual impact of each PSAT source on visibility at Class I areas. As described in earlier sections, the impacts of Cleco's BART-eligible sources were traced by the

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CAMx PSAT tool. The source apportionment CAMx output files were post-processed through MATS to calculate RRF values, which were then used in contribution analysis workbooks provided by the EPA. The calculations in these workbooks are based on the New IMPROVE equation, the IMPROVE monitor data, and the RRF values calculated by MATS.

The contribution analysis workbooks are designed to retrieve the monitored concentrations of visibility-impairing pollutants associated with the 20% worst visibility days from 2002 (base year) IMPROVE data, and to multiply them by the 2018 future year RRF values as well as the PSAT-negated RRF values associated with each PSAT source. The resulting values are input to the New IMPROVE equation, which calculates the 2018 projected light extinction values for each of the 20% worst days. These extinction values are averaged and converted into deciview haze index values. PSAT-negated haze index values represent the total 2018 deciview haze index value minus the contribution of the individual PSAT source. The individual impact of each PSAT source is calculated as the difference between the total 2018 future year haze index value and each PSAT-negated haze index value.

Using the EPA workbooks as a basis, Trinity also evaluated the maximum modeled impact for all days based on a natural visibility background approach. The monitored concentrations of visibility impairing pollutants for all monitored days were retrieved and multiplied by the 2018 future year RRF values and the PSAT-negated RRF values associated with each PSAT source. Because all monitored days were under consideration for this analysis, an average of the 20% Best and 20% Worst RRF values output by MATS were used. The resulting projected pollutant concentrations were input to the New IMPROVE equation. Individual source contributions to light extinction for all dates were then determined as the difference between the total 2018 light extinction and the PSAT-negated light extinction.

The deciview visibility impact based on a natural visibility background approach was then calculated as the difference between the individual source haze index and the natural haze index, as presented in the TCEQ BART screening CAMx modeling protocol.[29] Annual average natural background conditions for Caney Creek and Breton are obtained per EPA guidance.[30]

$$Contribution_{natural}\,(dv) = Haze\ Index_{source} - Haze\ Index_{natural} = 10 \times \ln\left(\frac{b_{ext\_source} + b_{ext\_natural}}{b_{ext\_natural}}\right)$$

Figures 5-1 and 5-4 display the average contributions from each individual unit to deciview haze index from the 20% worst days for Breton and Caney Creek, respectively. Similarly, Figures 5-2 and 5-5 display the maximum contributions from individual units to deciview haze index from the 20% worst days for Breton and Caney Creek, respectively. Figures 5-3 and 5-6 display the total maximum contributions from each facility from the 20% worst days compared to the 0.5 dv BART screening threshold at Breton and Caney Creek, respectively. Figures 5-7 and 5-9 present the maximum contributions from individual units from all days based on the natural visibility background approach for Breton and Caney Creek, respectively. Figures 5-8 and 5-10 display the maximum contributions from each facility for all days using the natural visibility background approach for Breton and Caney Creek, respectively.

For Breton during the 20% worst days, the maximum individual unit contribution is 0.0222 dv by Brame Unit 2 and the maximum facility contribution is 0.0236 dv from the BART-eligible sources at the Brame Plant.

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[29] Revised Draft Final Modeling Protocol: Screening Analysis of Potentially BART-Eligible Sources in Texas. Prepared for the TCEQ by ENVIRON International Corporation. September 27, 2006.

[30] "Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Program." Prepared for the EPA by Battelle. September 2003.

Additionally, the maximum individual unit contribution at Breton for all days based on a natural visibility background approach is 0.0885 dv by Brame Unit 2 while the maximum facility contribution is 0.0951 dv by the Brame Plant. All of these values are insignificant compared to the 0.5 dv threshold for BART eligibility. Similar to the Breton results, during the 20% worst days the maximum individual unit contribution at Caney Creek is only 0.0129 dv from Brame Unit 2 while the maximum facility contribution is 0.0146 dv from the BART-eligible sources at the Brame Plant. The maximum individual unit contribution at Caney Creek for all days based on a natural visibility background approach is 0.2673 dv by Brame Unit 2 while the maximum facility contribution is 0.2852 dv by the Brame Plant. These values are also insignificant in comparison to the 0.5 dv threshold.

Figure 5-1. Average Contribution by Individual Units to Deciview Haze Index at Breton Wilderness Area for 20% Worst Days

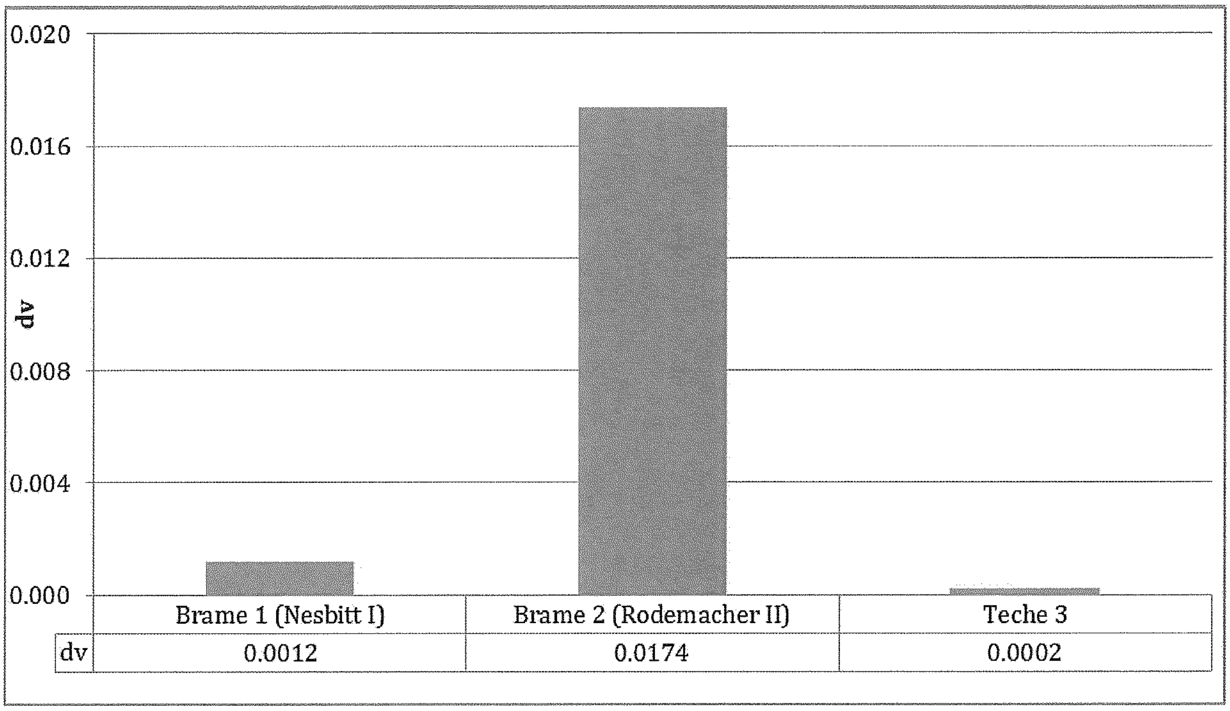

Figure 5-2. Maximum Contribution by Individual Units to Deciview Haze Index at Breton Wilderness Area for 20% Worst Days

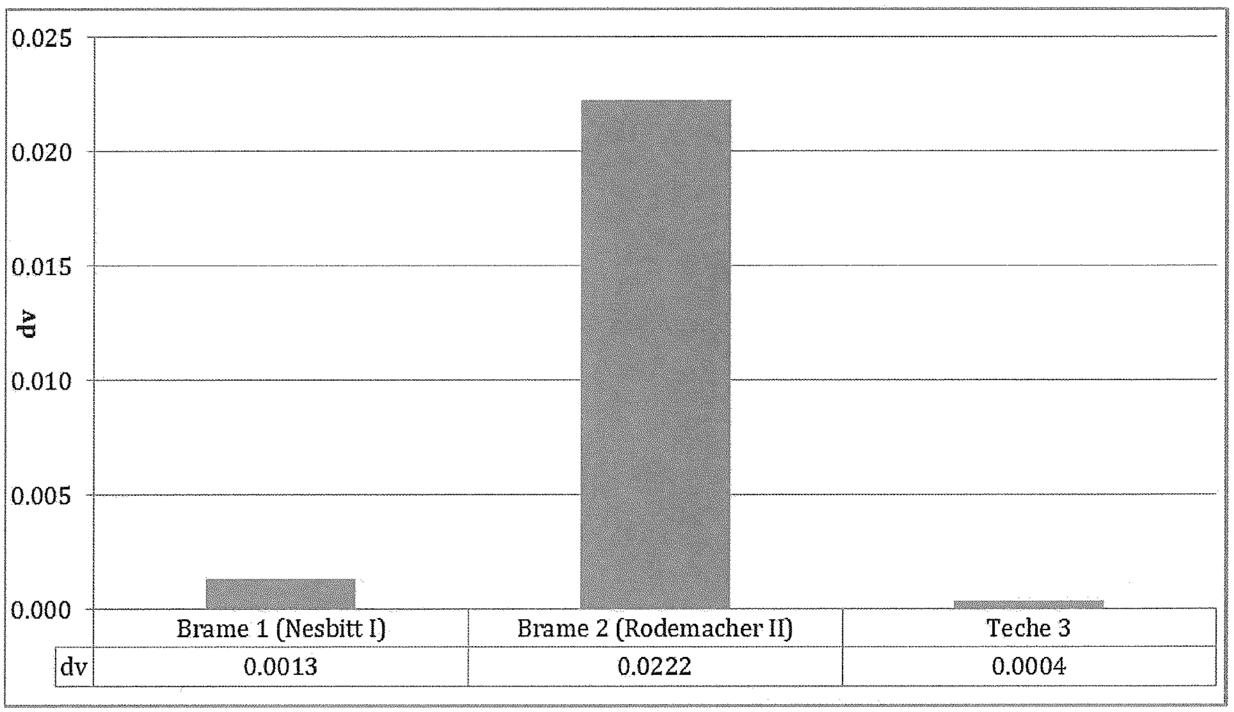

Figure 5-3. Maximum Contribution by Plant to Deciview Haze Index at Breton Wilderness Area for 20% Worst Days

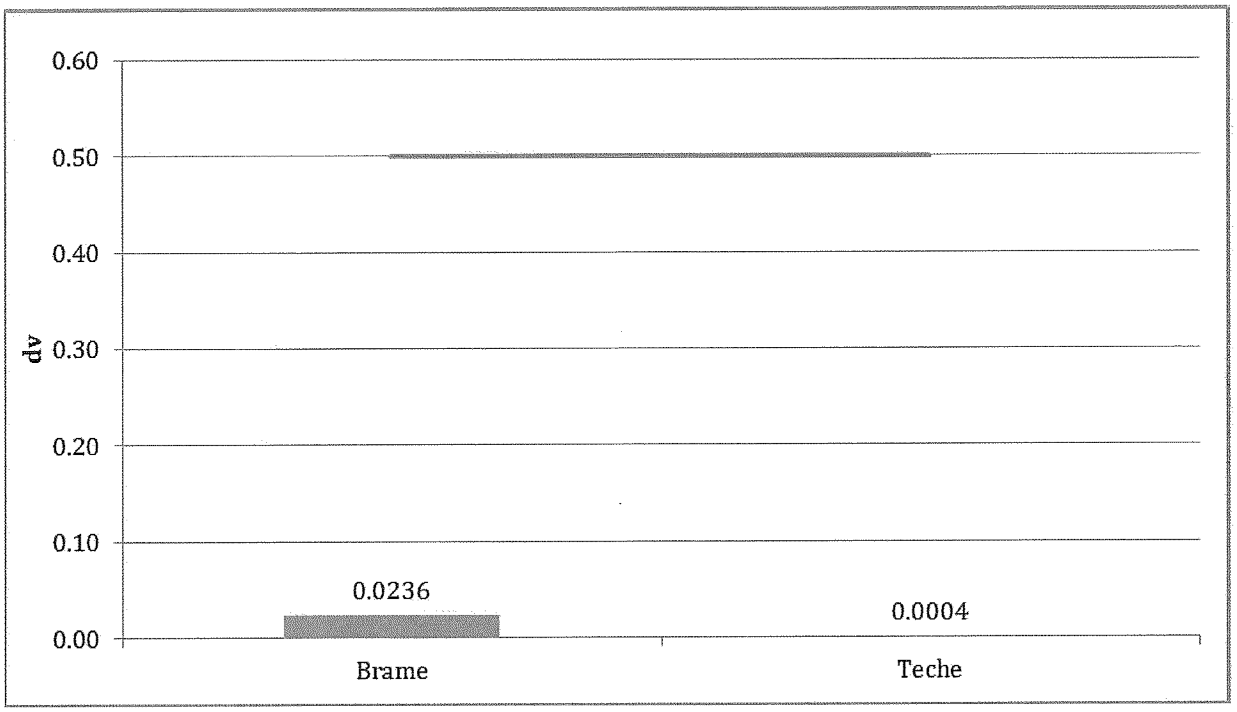

Figure 5-4. Average Contribution by Individual Units to Deciview Haze Index at Caney Creek Wilderness Area for 20% Worst Days

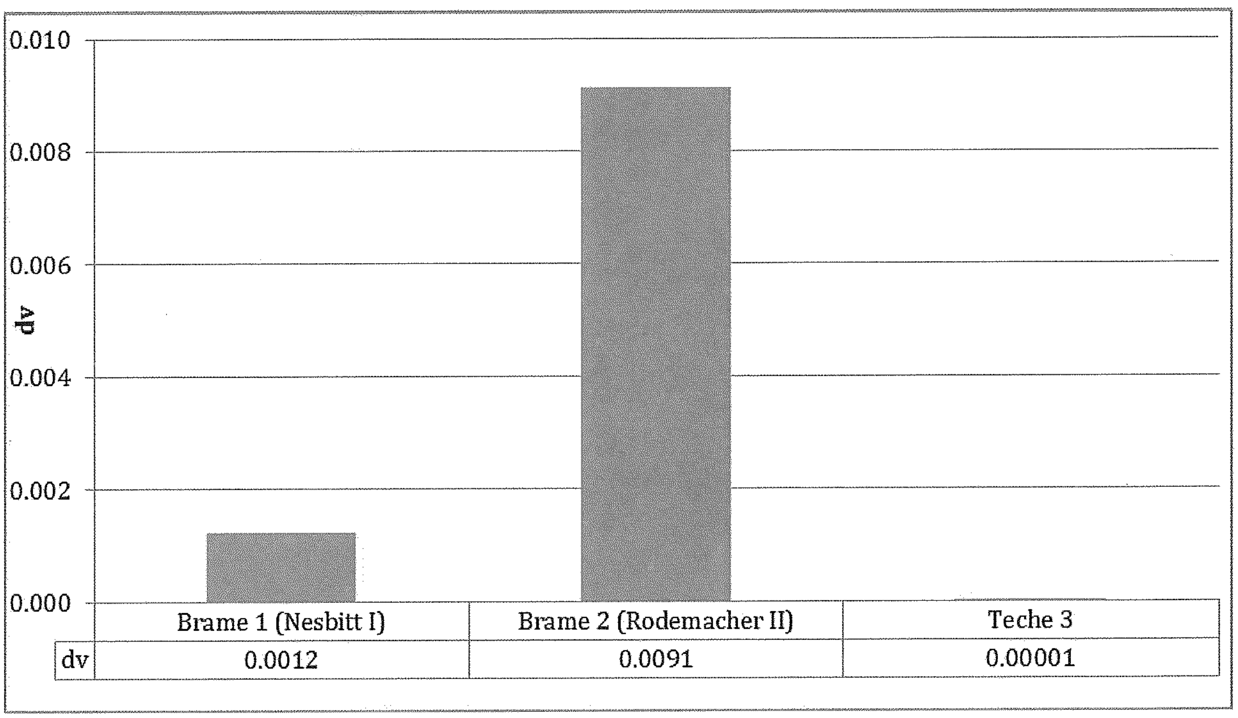

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Figure 5-5. Maximum Contribution by Individual Units to Deciview Haze Index at Caney Creek Wilderness Area for 20% Worst Days

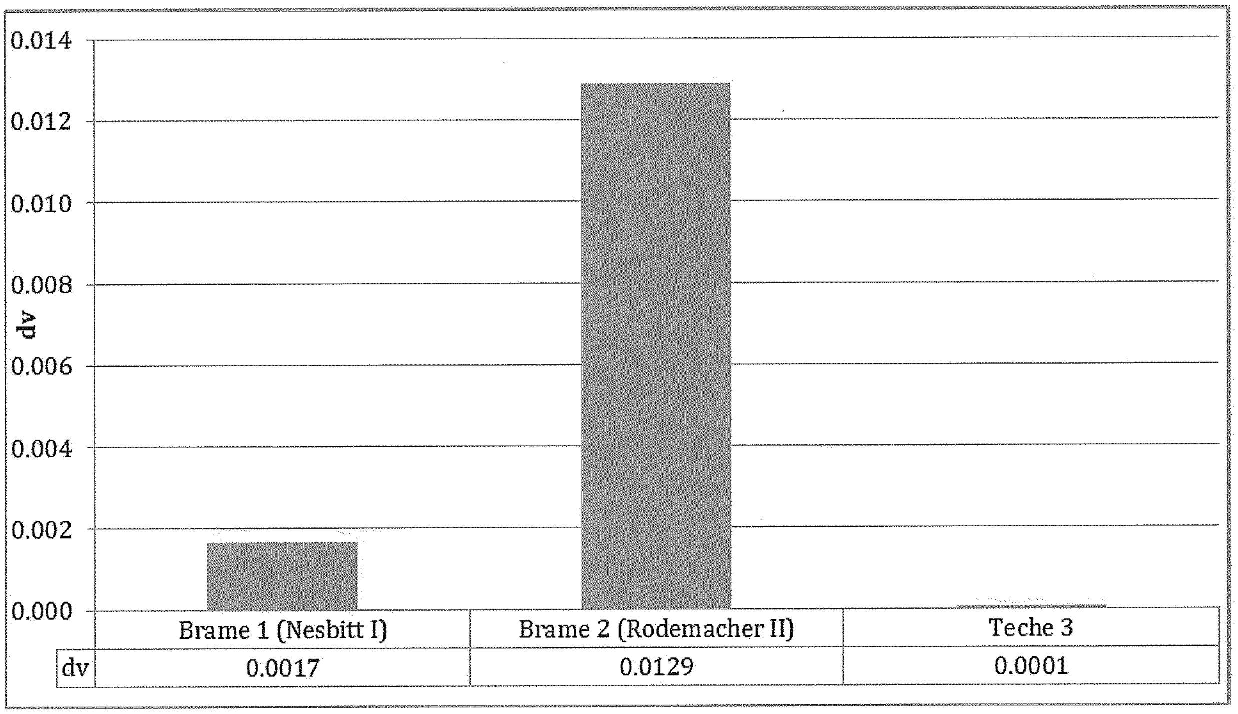


Figure 5-6. Maximum Contribution by Plant to Deciview Haze Index at Caney Creek Wilderness Area for 20% Worst Days

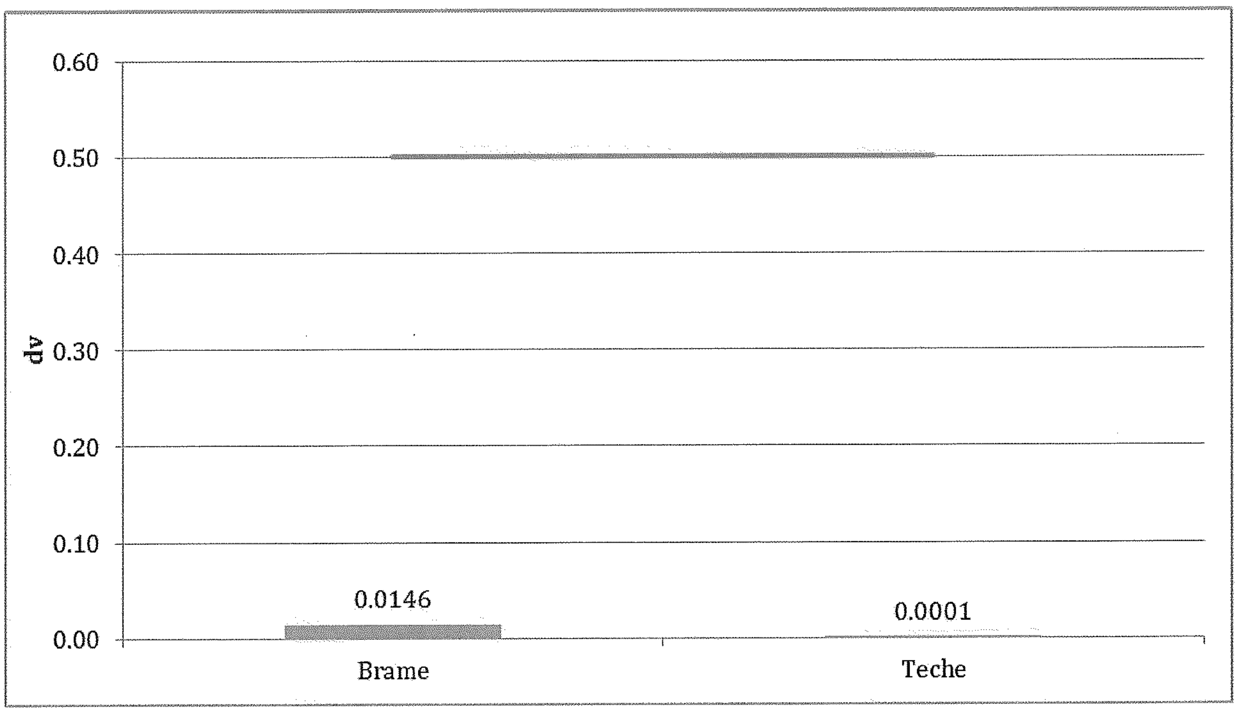


Figure 5-7. Maximum Contribution by Individual Unit to Deciview Haze Index at Breton Wilderness Area for All Days based on Natural Visibility Background Approach

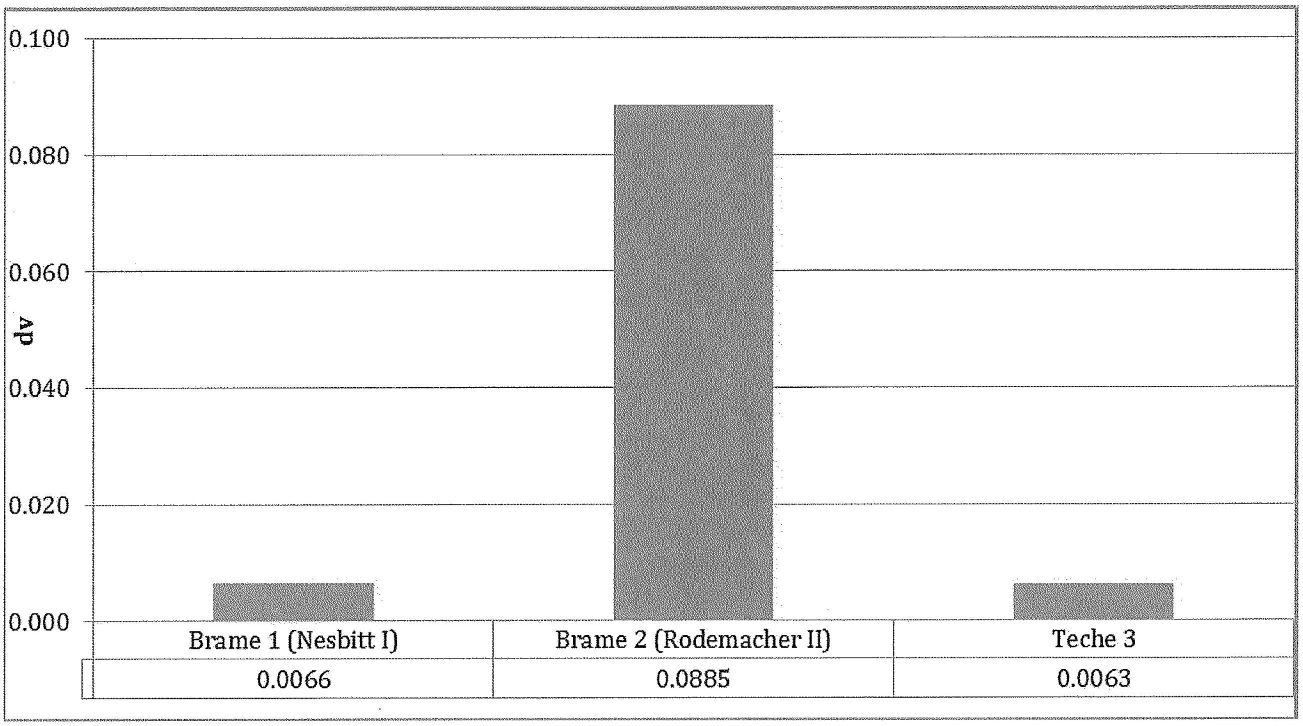


Figure 5-8. Maximum Contribution by Plant to Deciview Haze Index at Breton Wilderness Area for All Days based on Natural Visibility Background Approach

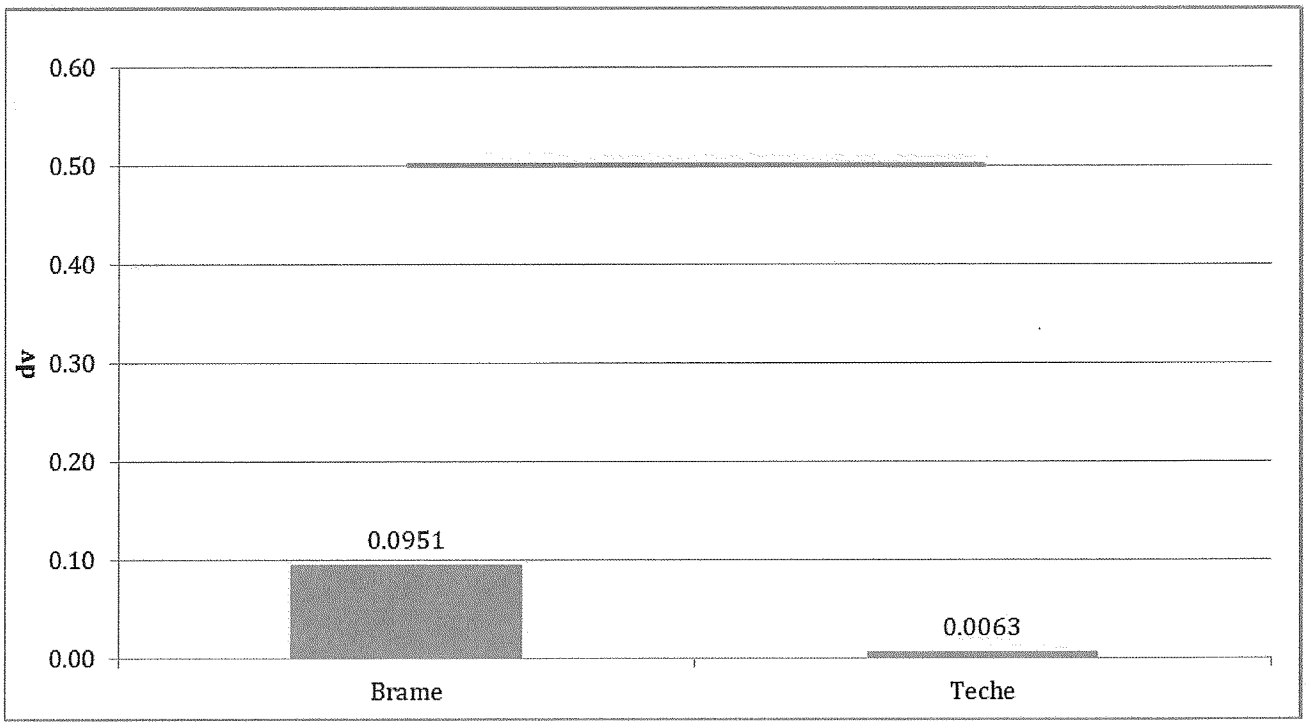


Figure 5-9. Maximum Contribution by Individual Unit to Deciview Haze Index at Caney Creek Wilderness Area for All Days based on Natural Visibility Background Approach

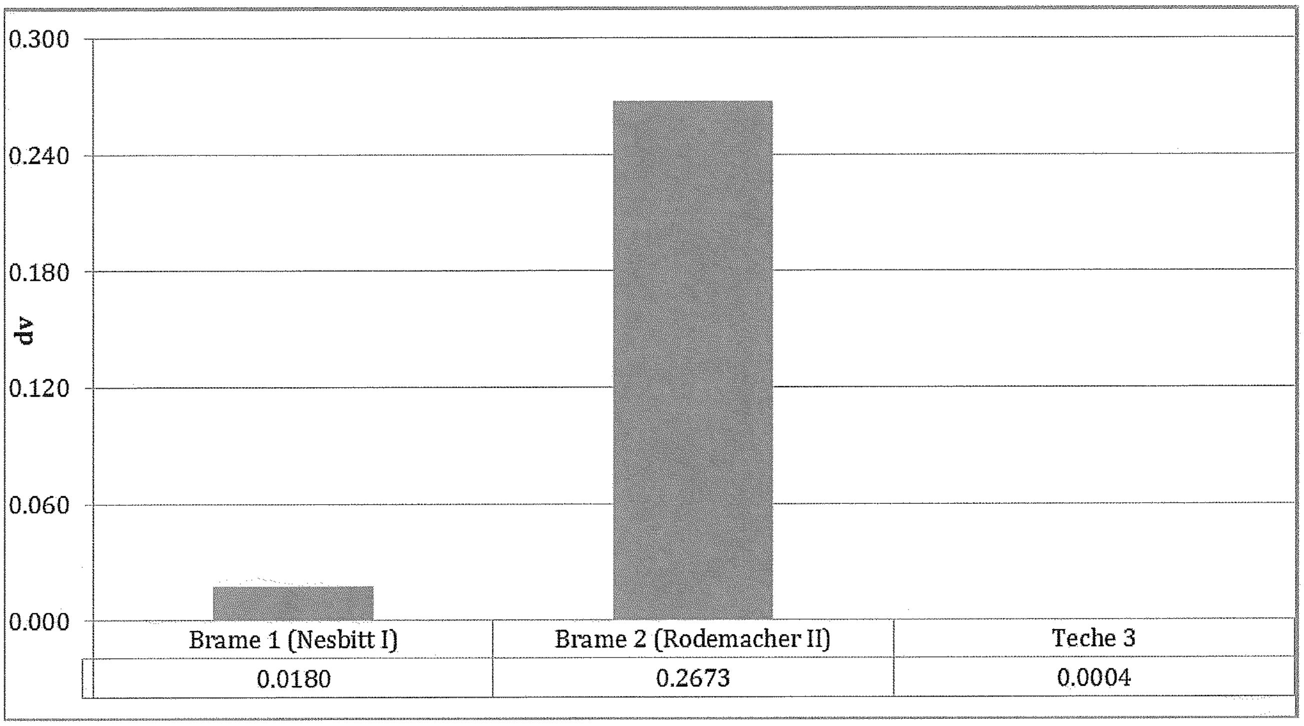
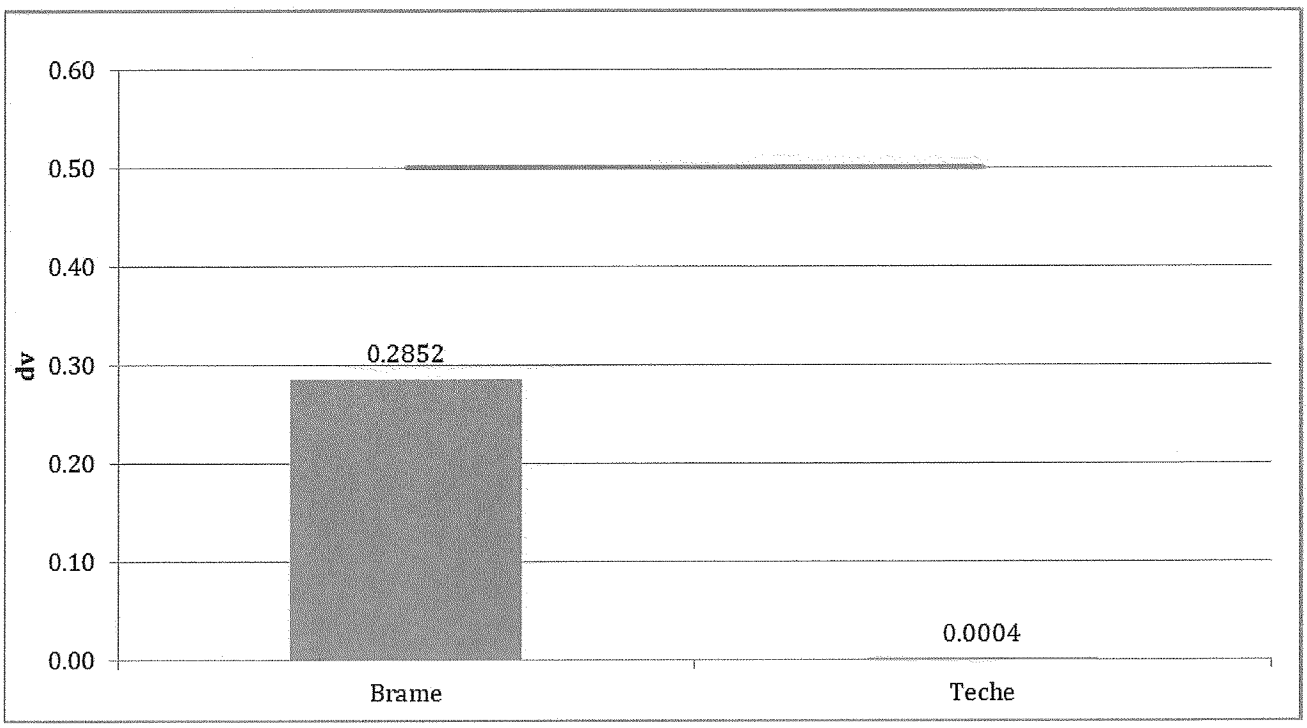


Figure 5-10. Maximum Contribution by Plant to Deciview Haze Index at Caney Creek Wilderness Area for All Days based on Natural Visibility Background Approach



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In addition to the individual impacts from the Cleco BART-eligible sources, Trinity also reviewed the cumulative impact of all Cleco BART-eligible sources in Louisiana at Breton and Caney Creek. The cumulative average contribution to the deciview haze index on the 20% worst days at Breton is 0.0188 dv and at Caney Creek is 0.0104 dv. The cumulative maximum contribution on the 20% worst days at Breton is 0.0239 dv and at Caney Creek is 0.0146 dv, which is only 5% and 3% of the 0.5 dv screening threshold, respectively. Additionally, the cumulative maximum contribution for all days with a natural background is 0.1013 dv at Breton and 0.2857 dv at Caney Creek, both of which fall below the 0.5 dv threshold. Since the cumulative impact of all Cleco BART-eligible sources is well below the screening threshold, Trinity concludes that none of the individual sources are subject to BART, similar to the approach used by the TCEQ for the Texas BART screening analysis.[31] This cumulative approach used by the TCEQ was accepted by EPA Region 6 in the proposed Texas Regional Haze FIP.[32]

Additionally, as discussed in Section 3.2.5, it was predicted that the CAMx model would result in speciated contributions similar to those observed in the IMPROVE data. Figures 5-11 and 5-12 show the speciated contribution to visibility impairment at Breton based on IMPROVE data and modeled CAMx values from the Cleco BART Screening scenario, respectively. These figures demonstrate that modeled CAMx pollutant contributions very closely align with actual observed values, which further confirms that CAMx is an appropriate model to use for this BART screening analysis.

Figure 5-11. Observed (IMPROVE) Percent of Total Extinction by Species for 20% Worst Days at Breton Wilderness Area

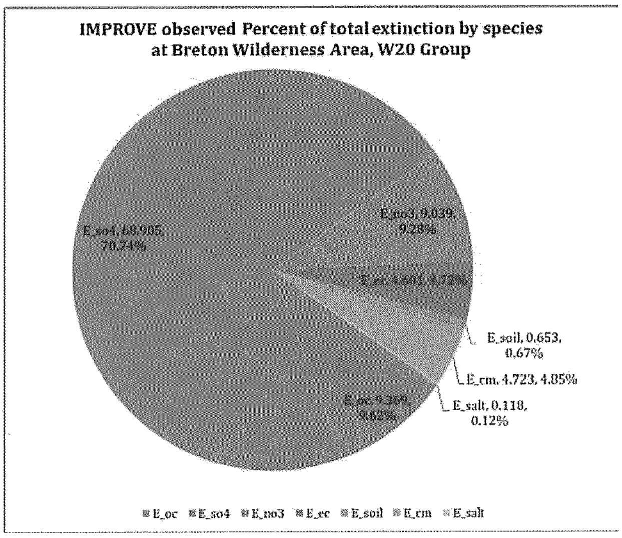
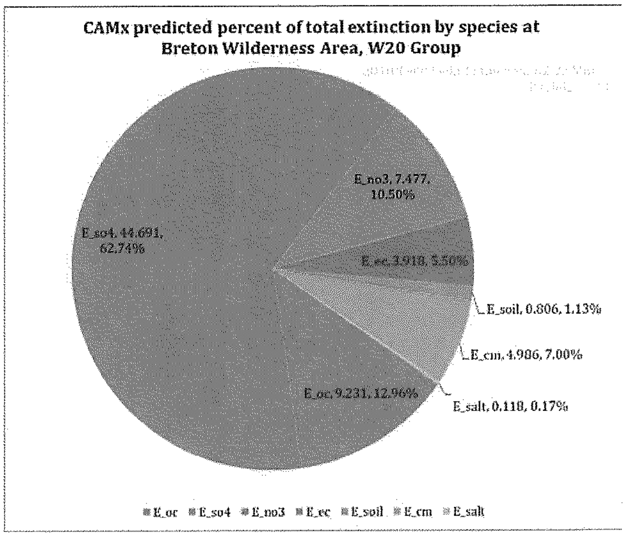


Figure 5-12. CAMx Predicted Percent of Total Extinction by Species for 20% Worst Days at Breton Wilderness Area



As requested in the Section 114 Request, Trinity also completed an initial screening analysis for each facility using CALPUFF, utilizing the default regulatory options consistent with the CENRAP CALPUFF modeling protocol. Table 5-1 below presents the summary CALPUFF-predicted baseline visibility and CAMx-predicted

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[31] Morris, Ralph. Screening Analysis of Potential BART-Eligible Sources in Texas. Prepared for Texas Commission on Environmental Quality. September 27, 2006.

[32] Snyder, Erik, Michael Feldman, and Joe Kordzi. "Technical Support Document for the Oklahoma and Texas Regional Haze Federal Implementation Plans." U.S. EPA. November 2014.

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deciview impairment at Breton.[33] Table 5-2 presents the summary of CALPUFF- and CAMx-predicted results at Caney Creek.

Table 5-1. CAMx and CALPUFF Predicted Deciview Impairment at Breton Wilderness Area

Facility	CALPUFF Predicted Baseline Visibility[34]		CAMx Predicted Contribution at Worst 20% Days		CAMx Predicted Contribution for All Days with Natural Background
	Maximum[35] (dv)	98th Percentile[36] (dv)	Maximum (dv)	Average (dv)	Maximum (dv)
Brame Plant	2.526	1.060	0.0236	0.0186	0.0951
Teche Plant	0.688	0.299	0.0004	0.0002	0.0063

Table 5-2. CAMx and CALPUFF Predicted Deciview Impairment at Caney Creek Wilderness Area

Facility	CALPUFF Predicted Baseline Visibility[37]		CAMx Predicted Contribution at Worst 20% Days		CAMx Predicted Contribution for All Days with Natural Background
	Maximum[38] (dv)	98th Percentile[39] (dv)	Maximum (dv)	Average (dv)	Maximum (dv)
Brame Plant	2.551	1.215	0.0146	0.0104	0.2852
Teche Plant	0.190	0.106	0.0001	0.00001	0.0004

As shown in the tables above, the 98th percentile deciview impairment predicted by CALPUFF significantly over-predicts visibility impacts from Cleco's plants compared not only to the average contribution but also to the maximum deciview impairment predicted by CAMx for the worst 20% days.

[33] For CAMx modeling, actual annual emission data in tons per year from 2002 NEI was used except where actual emission were not available then permitted values were used.

[34] Cleco Corporation. CALPUFF Modeling Report: BART Applicability Screening Analysis. Prepared by Trinity Consultants. July 30, 2015.

[35] Maximum deciview impairment calculated as maximum deciview impairment between 2001 to 2003.

[36] 98th Percentile deciview impairment calculated as maximum 98th percentile deciview impairment between 2001-2003.

[37] Cleco Corporation. CALPUFF Modeling Report: BART Applicability Screening Analysis. Prepared by Trinity Consultants. July 30, 2015.

[38] Maximum deciview impairment calculated as maximum deciview impairment between 2001 to 2003.

[39] 98th Percentile deciview impairment calculated as maximum 98th percentile deciview impairment between 2001-2003.

6. CONCLUSIONS

Trinity prepared an initial screening applicability analysis for the BART-eligible sources at two (2) of Cleco's electric power generating stations located in Louisiana. The CALPUFF results were submitted to the LDEQ and the EPA on July 30, 2015. As presented in Section 3, due to known limitations and issues associated with the CALPUFF modeling protocol and questions regarding the reliability of the model to accurately predict visibility impacts, Trinity conducted an updated BART applicability screening analysis using CAMx for (3) BART-eligible sources at the Brame Plant and the Teche Plant. The CAMx screening analysis demonstrates that the average and maximum source contributions from the 20% worst days as well as the maximum contributions from all days using a natural visibility background approach from all Cleco BART-eligible sources are significantly below the threshold of 0.5 deciview at both the Caney Creek and Breton Class I areas. Furthermore, the cumulative impact of all Cleco BART-eligible sources in Louisiana based on CAMx modeling is well below the 0.5 dv screening threshold. As such, the units do not contribute to visibility impairment at any Class I area, and none of the units are subject to BART.

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